

Name _____

HONORS ALGEBRA 2

SUMMER REVIEW ASSIGNMENT

Welcome to Honors Algebra 2! We look forward to having you in class next year.

In order to keep your Algebra 1 math skills sharp and to help prepare you for Honors Algebra 2 next year, please complete this Algebra I review of basic skills. These topics are covered in Chapter 1 of our textbook. By completing this review, we will be able to do a very quick review of Chapter 1 at the beginning of the year and get started with one of the major topics of Algebra 2, linear equations.

Directions: Please complete the following problems and make sure to show all work!! This packet is due the first day of school in September, and will count as a major assignment grade. We will have a Chapter 1 test on this material and a few other topics from Chapter 1 at the beginning of the school year. There are some worked out examples included in the packet to help you solve the problems. The following link is to Chapter 1 of the textbook, which you can also use to help solve some of the problems.

<http://bit.ly/21W67Ei>

Thanks and we look forward to seeing you in September!

Mr. Fogle and Mrs. Hayden

Section 1-1: Expressions and Formulas

Find the value of each expression using the order of operations. Show your work. Use the order of operations (PEMDAS)!

1. $4 + 64 \div (8 \bullet 4) \div 2$ 2. $10 - [5 + 9(4)]$ 3. $12 + [10 \div (11 - 3 \bullet 2)]$

Evaluate each expression if $w = 6, x = 0.4, y = \frac{1}{2}, z = -3$. Show your work.

4. $5x + 2z$ 5. $\frac{2z - 15x}{3y}$

6. Choose the correct answer for the value of $1 + 3(5 - 17) \div 2 \bullet 6$

- A) -4 B) 109 C) -107 D) -144

Section 1-2: Properties of Real Numbers

REAL NUMBERS: real numbers can be classified as either **rational** or **irrational**

rational number – can be expressed as a ratio $\frac{a}{b}$, where a and b are integers and $b \neq 0$. The decimal form either **terminates** or **repeats**.

$$\text{EX: } 7, -4.3, \frac{2}{3}, -15.324, \sqrt{64}$$

Irrational number – a real number that is not rational, the decimal form neither terminates nor repeats

$$\text{EX: } \sqrt{2}, \pi, \sqrt{15}$$

RATIONAL NUMBERS:

Natural # = {1, 2, 3, 4, 5, ...} **Whole #** = {0, 1, 2, 3, 4, ...}

Integers (Z) = {... -3, -2, -1, 0, 1, 2, ...}

REAL NUMBER PROPERTIES: For any real numbers, a, b, and c

	<u>Addition</u>	<u>Multiplication</u>
Commutative	$a + b = b + a$	$a \bullet b = b \bullet a$
Associative	$(a + b) + c = a + (b + c)$	$(a \bullet b) \bullet c = a \bullet (b \bullet c)$
Identity	$a + 0 = a$	$a \bullet 1 = a$
Inverse	$a + (-a) = 0$	If $a \neq 0, a \bullet \frac{1}{a} = 1$

Distributive $a(b + c) = a \bullet b + a \bullet c$

Reflexive $a = a$

Symmetric If $a = b$, then $b = a$

Transitive If $a = b$ and $b = c$, then $a = c$

Substitution If $a = b$, then a may be replaced by b and b may be replaced by a

Addition Property If $a = b$, then $a + c = b + c$

Subtraction Property If $a = b$, then $a - c = b - c$

Multiplication Property If $a = b$, then $a \bullet c = b \bullet c$

Division Property If $a = b$, and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$

Name the sets of numbers to which each real number belongs.

7. -4.55

8. $\sqrt{10}$

9. -31

Name the property illustrated by each equation.

10. $\frac{2}{3} \bullet \frac{3}{2} = 1$

11. $(a + 4) + 2 = a + (4 + 2)$

12. $5a + (-5a) = 0$

13. $(3 \bullet 4) \bullet 25 = 3 \bullet (4 \bullet 25)$

14. $5x(3x - 4) = 15x^2 - 20x$

15. If $x = 5$, then $3x = 15$. _____

16. If $x = 8$, then $8 = x$. _____

17. If $2x + 8x = 20$, then $10x = 20$. _____

18. If $x + 5 = 9$, then $5 + x = 9$. _____

19. Name the additive inverse and multiplicative inverse of -10 .

20. Simplify each expression. Show your work.

a. $7a + 3b - 4a - 5b$

b. $3(15x - 9y) + 5(4y - x)$

c. $8(r + 7t) - 4(13t + 5r)$

Section 1-3: Solving Equations

21. Write an algebraic expression to represent each verbal expression.

- a. the sum of 5 and three times a number _____
- b. four less than the square of a number _____
- c. five times the sum of 9 and a number _____

Solve each equation. Show your work.

22. $2p + 15 = 29$

23. $7a - 3a + 2a - a = 16$

24. $\frac{1}{9} - \frac{2}{3}b = \frac{1}{18}$

25. $27 = -9(y + 5)$

26. $3f - 2 = 4f + 5$

27. $4.3n + 1 = 7 - 1.7n$

28. $3(2x + 25) - 2(x - 1) = 78$

Solve each equation or formula for the specified variable. Isolate the variable you are solving for.

29. $d = rt$. Solve for r

30. $V = \frac{1}{3}\pi r^2 h$. Solve for h .

31- 32 Solve each problem by defining a variable, writing an equation, and solving the equation. Show your work.

31. The PTO has raised \$1800 to help pay for a trip to an amusement park. They ask that there be one adult for every five students attending. Adult tickets cost \$45 and student tickets cost \$30. If the group wants to take 50 students, how much will each student need to pay so that adults agreeing to chaperone pay nothing?

32. A trucking company is hired to deliver 125 lamps for \$12 each. The company agrees to pay \$45 for each lamp that is broken during transport. If the trucking company needs to receive a minimum payment of \$1365 for the shipment to cover their expenses, find the maximum number of lamps they can afford to break during the trip.

Section 1- 4: Solving Absolute Value Equations

Absolute value is the distance a number is from zero, it is never negative

Remember: $|5| = 5$ and $|-5| = 5$

Evaluate each expression if $a = -5, b = 6, c = 2.8$

33. $-|18 - 5c|$ 34. $3|a - 10| + |2a|$

Solve each absolute value equation. Show your work! Make sure to check your answer. * Remember there are 2 cases for absolute value equations!! *** Isolate the absolute value first!!**

EX: $|x - 7| = 5$ 2 parts

$$x - 7 = 5 \text{ or } x - 7 = -5$$

$$\underline{x = 12}$$

$$\underline{x = 2}$$

2 parts!!!

EX: $|x + 12| - 4 = 16$ add 4 to both sides

$$|x + 12| = 20 \text{ to isolate the abs.value}$$

$$x + 12 = 20 \text{ or } x + 12 = -20$$

$$\underline{x = 8}$$

or

$$\underline{x = -32}$$

2 parts!!!

35. $|a + 12| = 33$

$a + 12 = 33$ or _____

36. $7|4x - 13| = 35$

_____ or _____

37. $-12|9x + 1| = 144$

_____ or _____

38. $4|3t + 8| = 16t$

_____ or _____

Section 1- 5: Solve Inequalities

*** Remember: When you multiply or divide both sides of an inequality by a negative number, **you must REVERSE the inequality symbol!!!**

EX: $-3x + 5 < 20$

$-3x < 15$ Subtract 5 from both sides to isolate x

$-3 \quad -3$ Divide both sides by -3

$x > -5$ Reverse the symbol since you divided by -3

Solve each inequality. Then graph the solution set on a number line. Show your work.

39. $5x < 35$

40. $\frac{g}{-3} \geq -9$

←-----→

←-----→

41. $13 - 4k \leq 27$

42. $-27 < 8m + 5$

←-----→

←-----→

$$43. \quad 6d + 3 \geq 5d - 2$$

$$44. \quad 2(g + 4) < 3g - 2(g - 5)$$

←-----→

←-----→

$$45. \quad y < \frac{-y + 2}{9}$$

←-----→

46 – 47 Julie's scores on the first four of five 100-point history tests were 85, 91, 89, and 94.

46. If a grade of at least 90 is an A, write an inequality to find the score that Julie must receive on her fifth test to have an A test average.

47. Solve the inequality and interpret the solution.